MICRO-SCALE AGRICULTURAL-GEOGRAPHICAL STUDIES AS A BASIS FOR TERRITORY ANALYSIS AND PROGRAMMING AGRICULTURAL PROGRESS

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Increasing production of grain and forage which is a basis of further inrease of animal output is the first and foremost task of Polish agriculture. As land resources are limited, the effective utilization ofevery hectare of agricultural land and of production means supplied to agriculture by industry are roads leading to this goal. Outlays for agriculture will only bring the expected production effects: increased crops of basic plants, growth of animal population and greater effects of stockbreeding, when progress is introduced in agricultural practice at a wider scale than so far.

Progress[5/] in a wide meaning of the word means here more advantageous solution of technological, technical, organizational and economic problems. The aium of progress is: /1/ improving production system, /2/ applying more effective means of production, /3/ improving work conditions, /4/ more effective qualitative and quantitative results and /5/ better economic effects consisting in cheaper, better and greater production.

Thus, progress includes:
/1/ new technological solutions, /2/ more effective utilization of biological factors /improvement/ of live organisms,

applying means which stimulate useful physiological transformations, /3/ new technological methods, /4/ more efficient tools, /5/ more efficient organization.

Most generally speaking by progress[4/] in agriculture we understand everything that is introduced in production as a new scientific or technical discovery, and also all that is new in given conditions and in a given period of time, although it might have been applied in practice elsewhere for quite a long time.

So a thorough and all-round territorial analysis is the basis allowing to get an idea about the factors of progress which are best adapted to the specific needs and possibilities of a given farm, village, or rural community. It allows to find out the committed errors, existing shortcomings and difficulties encoutered in technical operations, plant growing, animal breeding, and in organizational solutions. The analysis of the initial situation will show what should and can be done in a given year to modernize production in various groups of farms, it will allow to know what are farmers interested in and to what extent the methods of farming have been influenced by tradition.

Below are the successive stages of work indispensable to define the requirements of a given area and aimed at a correct planning of agricultural progress:
Collecting initial data on:

/1/ natural conditions /configuration of surface, climate, soils/
/2/ age and education of farm owners /unsers/
/3/ structure of farms in the village /land fragmentation and subdivision of farms/
/4/ Farming methods, i.e. organizational - technical features of agriculture

/5/ present production situation
/6/ interests of rural population.

The lack or incomplete character of statistical data /particularly for small territorial units/ which are the basis of quantitative conclusions, and the need to get a thorough knowledge of the actual geographical diversification of agriculture are the reason for conducting studies on a micro-geographical scale /field and laboratory as well/.

A selected private, state - or co-operative farm a village or a rural community are a basic unit in such studies. The objective of micro-scale study is to supplement available statistical data as regards:

/1/ agrarian structure /land fragmentation and subdivision of farms/
/2/ agrotechnique /crop rotation, fertilizing, crop cultivation/
/3/ intensity of farming /inputs live and mechanical labour/
/4/ output /yields of all crops, animal production, commercial production, and investigation of the reasons of considerable differences in the production level in single farms: this will help to eliminate factors impeding production growth.

Direct field studies based on intervieus with agronomers, village bailiffs, farmers, etc., and keen observation allow not only to fill the gaps in statistical material but also to know and understand better the complex mechanism of agricultural production, conditions and factors on which production level depends, and this way to get a clearer idea of problems related to agriculture in its complexity and changeability.

The collecting of initial data needed to analyse the given area should begin with defining the natural conditions of the inwestigated unit /village or farm/.

The section of "Territorial analyses and progress programming" operating at the Agricultural Regional Experiment Station at Łosiów from January 1970, carries out microscale case studies in the Opole Voivodship. This analytical studies based on laboratory and field work, are aimed at establishing the needs and possibilities of introducing progressive methods of farming. The method of case studies worked out by the present author may serve as a key to more precise operation of localagricultural service. One of the tasks of this service consists in determining the nature of production reserves in agriculture, their scope and means of their utilization. This is a difficult task as agrocultural production takes place in changing conditions, and changes cannot be determined in advance. In addition, the total of production reserves is composed of the production potential of many thousand small farms with greatly differing resources and possibilities. Comparing production results of single farms to those achieved by the best farms is one of the means of disclosing production reserves in agriculture. Estimates are given more precise value when comparing groups of farms with possibly uniform features. As there is a large number of farms in a district and all the greater in a voivodship, it is impossible to examine all for them, and for this reason it is recommended in analytical studies to carry out a complete analysis of selected farms in a given village. To apply a uniform method of investigation in the analysis of a large number of private farms in the Opole Voiwodship, a "Document journal" has been worked out by the present author.

The selection of a farm for analysis is made by a worker of agronomic service: an agronomist, or inspector of the Agricultural Regional Experiment Station at Łosiów. The chosen farm should be typical of the given village in the following respects:

/1/ farm area /but not less than 5 ha,
/2/ soil conditions,
/3/ land use structure,
/4/ production level,
/5/ level of agriculture,
/6/ economic situation /that is, an average farm should be selected/. A thorough knowledge of the selected farms /in the village/ will allow to disclose the possibly existing production reserves and the ways of their utilization to increase crop and animal production. The analysis of collected data will help in finding the reasons for a considerable difference existing in the level of agrocultural production in various groups of farms and will facilitate the selection of the best orientation in agricultural production for each separate region of the voivodship.

The collecting of initial data indispensable for the carrying out of a keen analysis of a farm /or village/ should begin with the defining of natural conditions of a given unit "It is more and more evident that the solving of a number of economic problems cannot take place by using universally binding rules, but by taking local natural conditions into consideration".[1/]

Despite the importance of natural conditions and the realization of this importance, they have not been examined fully and according to uniform criteria. This has been the result of objective difficulties. The evaluation of natural conditions and defining their usefulness for various branches,

lines and orientations of agriculture as a whole, is a complex task because it is difficult to find appropriate criteria and even more difficult to apply strict standards of evaluation. For these reasons at least for the time being attention should be drawn in micro-scale agricultural-geographical studies on outstandingly negative or particularly favourable features for agroculture, resulting from the land forms, climatic conditions and soils. The knowledge of potential conditions of geographical environment allows a selection of grain varieties which should yield higher crops in the given conditions, and also will indicate the amount of lime and mineral ferilizers to be used. It is generally known that good results of plant growing depend on the selection of varieties best adapted to the given habitat and the effectiveness of fertilizing depends on correct dosing.

Field observations, even without detailed investigation, provide ground for drawing conclusions about rational utilization of natural conditions and possibilities of making improvements in land use and farming methods.

Studies carried out by the present author in the Opole and Brzeg districts [2,3] have revealed the existence of clear correlation between natural conditions and forms of land use. Also the influence of natural conditions on organization of production was recorded.

When investigating and studying natural conditions one should take advantage, apart from own observations, of all material collected or elaborated by specialists on natural sciences /hpysical geographers, pedologists, botanists, climatologists, etc./.

The next stage of case studies is the collecting of the data on the age and education of farm owners /or users/. This is indispensable wherever popularization of progress is concerned, because the rate of innovations in the methods of farming largely depends on the age and educational level of the farmer.

In the summer of 1970 the present author carried out field studies in the Brzeg district with the aim of defining the ability of utilizating the latest scientific achievements in farming. The data revealed that as many as 30.1 per cent of all farm owners in the Brzeg district are people over 60 years of age. The rate of making practical use of scientific achievements is much slower with farmers of such advanced age. The traditional methods of farming have been so strongly instilled in them that agricultural service officers are often unable to convince the farmer about the necessity of applying more up-to-date methods. Vocational qualifications of a large number of farmers, particularly the group of older ones, fail to keep pace with the present requirements. This is proved, among other things, by differences in cereal and potato yields obtained from experimental plots and those got in production. Changes in production require that farmers themselves and agricultural service officers have a greater nad greater amount of professional knowledge, skill and experience in making appropriate decisions. Unskilled and of economic conditions created by the agricultural policy of the state, in its final result hampers the development of agriculture and has a negative effect on the rate of growth of various lines of agricultural production. This imposes the task on agricultural service officers to train farmers within determined scope of knowledge. It also seems indispensable to intensify individual instruction of and advice for this group of farmers. A detailed analysis of the data obtained during case studies with a simultaneous taking into account the needs and interests of local milieus and the influence od tradition on the way of farming, will allow to plan the course of training in a correct way. Vocational training of farmers has now become a factor deciding on the optimum utilization of the means of production placed at the disposal of agroculture.

Case studies have proved that there is only an insignificant group of farmers who take a negative stand towards any innovations and changes which, in their opinion, disturb the traditional order and destroy the adopted way of thinking and acting. More often the reluctance to apply new methods is the result of economic factors. Many farmers fear that the risk of making changes would not always pay. Thus, if a farmer is to make a decision introducing changes in his methods of farming, he must first be throughly acquainted with the essence of the change, take interest in it, become convinced that it is useful, test it in practice or see the effects of the innovation in some other farm.

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